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Instructional Telecommunications
Foundation, Inc.
P.O. Box 6060
Boulder, CO 80306

Telephone:
(303) 442-2707

May 23, 1997

Mr. William Caton, Acting Secretary
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554

Re: Reply Comments in Docket No. RM-9060
Amendment of Parts 21 and 74 to Enhance the
Ability of Multipoint Distribution Service
and Instructional Television Fixed Service
to Engage in Fixed Two-Way Transmissions

Dear Mr. Caton:

Transmitted herewith are an original and five (5) copies of the Reply Comments of Instructional Telecommunications Foundation, Inc. in the above-captioned proceeding. Should you have any questions with respect to this filing, please contact the undersigned.

Sincerely,

John B. Schwartz
President

Attachments

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Parts 21 and 74 to Enhance	)	
the Ability of Multipoint Distribution	)	RM-9060
Service and Instructional Television	)	
Fixed Service Licensees to Engage in	)	
Fixed Two-Way Transmissions	)	

To: The Commission

REPLY COMMENTS OF INSTRUCTIONAL TELECOMMUNICATIONS FOUNDATION

Executive Summary

Instructional Telecommunications Foundation, Inc. (ITF) strongly endorses amending the Commission's Rules to permit the routine two-way use of Instructional Television Fixed Service (ITFS) frequencies. Such leading figures as President Clinton, Vice President Gore, and FCC Chairman Hundt have recognized the importance of providing state-of-the-art telecommunications services to schools. Indeed, Congress has authorized, and the Commission recently implemented, a mechanism which will channel billions of dollars in universal service funds for this purpose.[1]

ITFS is one of a very small number of FCC-licensed services which is operated solely by educational entities. While ITFS

[1] See the *Report and Order* in CC Docket No. 96-45, released May 8, 1997.

traditionally has delivered one-way analog television programs (sometimes with audio return), this spectrum is capable of a great deal more. As many educational organizations commented, enhancing the capabilities of ITFS can make a tangible difference in giving teachers and students hands-on access to some of the most advanced telecommunications tools.[2] To cite a leading example, the internet has evolved into a versatile telecommunications platform which is already carrying data, voice, and video. Allowing schools to access---and contribute to---this worldwide storehouse of information at high speed is but one of the likely benefits from adoption of the current proposal.

ITF recognizes that the two-way proposal before the Commission needs to be refined. However, we believe that through rulemaking the Commission can develop policies that allow two-way MMDS/ITFS digital operation to proceed, while at the same time protecting the unique value of ITFS service.

About ITF

ITF is licensee of seven stations in the Instructional Television Fixed Service: WHR-509, Indianapolis; WHR-527, Philadelphia; WHR-512, Sacramento; WHR-511, Kansas City; WLX-699, Salt Lake City; WLX-816, Phoenix, and WLX-694, Las Vegas. These ITFS systems' mission is to provide instructional service to

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[2] See, for example, the comments of: the Catholic Telecommunications Network, at p. 3; Arizona Board of Regents, *et al*, p. 3; Pace Telecommunications Consortium, p. 4; Joint Comments prepared by Schwartz, Woods & Miller on behalf of 15 ITFS licensees (hereinafter "SWM Comments"), p. 4; Northeastern University, p. 2; Archdiocese of Los Angeles Education and Welfare Corporation, p. 2.

elementary and secondary schools in the metropolitan areas they serve. ITF serves both public and private schools, and has operated ITFS stations for more than a decade. ITF has leased excess capacity on most of its stations to wireless cable companies. However, we also have built and operated systems on a purely instructional basis.

DISCUSSION

I. Granting ITFS Stations Routine Two-Way Capability Can Make a Major Difference in American Education.

ITF's current instructional service consists of delivering one-way video to elementary and secondary schools. Because of the revenues we obtain from excess capacity leasing, we are able to provide schools with receiving equipment and programming without charge. While we have found that educators appreciate being able to utilize our rather extensive video offerings, this service does not allow us, or the institutions we serve, to participate in the advances in educational telecommunications which are sweeping the country.

For instance, it is already possible to enroll in for-credit college courses via the internet. Internet video and audio delivery make it possible to deliver lessons in real time, with multimedia extensions, or to "post" them so that students can play them at their convenience. While internet video is far from "broadcast quality" at dial-up connection speeds such as 14.4 or

28.8 kbps, resolution and frame rates improve greatly at the data rates that are possible with high-speed wireless delivery.

Many governmental organizations---including, among others, the FCC---post a great deal of valuable information on their web sites. Whole libraries of material, from both domestic and international sources, are available for research purposes via the internet.

Comparatively primitive internet telephone and videoconferencing technology is currently available, and refinements appear almost daily. Some predict that most videoconferencing and much long-distance telephony ultimately will be carried over the internet. Low-cost access to these technologies has vital educational implications. ITF looks forward to the day that we will be able to go far beyond our current offerings to deliver a wide array of two-way digital educational services.

As a result of the Commission's "Digital Declaratory Ruling",[3] it is now permissible to deliver downstream internet service via ITFS at high speed. That step alone is a major advance. However, it is insufficient to bring the full fruits of wireless digital technology to education. Unless current rules are overhauled, upstream connection to the internet generally will be accomplished through narrowband analog telephone lines.

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[3] *Declaratory Ruling and Order* In the Matter of Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations, DA 95-1854, released July 10, 1996.

Such connections limit the ability of schools to participate in two-way activities such as videoconferencing which require high bandwidths, and make it impractical to "serve" data from computers on their premises.[4] Further, without the cellularization and/or sectorization contemplated under the Petition for Rulemaking now before the Commission,[5] total delivery capacity will be far more limited.

ITF believes that in most urban areas educational data delivery will be accomplished in some relationship with commercial users of the spectrum, in light of the fact that ITFS and MMDS facilities need to be coordinated to prevent interference, and because many ITFS licensees lease excess capacity to commercial enterprises. While many commenters pointed out potential drawbacks in such arrangements[6]---which ITF will address in a later section of these Reply Comments---there are also significant advantages. The widespread commercial use of digital wireless equipment will radically reduce the cost of such items, just as ITFS equipment prices plummeted following the introduction of commercial wireless cable. The advent of new commercial revenue potential creates an opportunity for ITFS

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[4] ITF disagrees with the comments of ITFS licensee Caritas Communications, Inc. that it is best to confine upstream transmissions to MDS Channels 1, 2, and 2A. While such an arrangement simplifies interference coordination, it deprives ITFS entities of the ability to operate their own high capacity upstream channels.

[5] See the Petition for Rulemaking submitted by over one hundred entities (hereinafter "Two-Way Petition") dated March 14, 1997 at p. 28.

[6] See, for instance, SWM Comments at pp. 4-5; Northeastern University, pp. 3-7; Arizona Board of Regents, *et al*, pp. 5-7; Catholic Television Network, pp. 7-14.

entities to earn additional income through the leasing of excess channel capacity or going into business independently.

We observe that in this proceeding educators have expressed interest in digital two-way delivery quite without regard to the commercial implications. In particular, we note the favorable comments of The PACE Telecommunications Consortium based on plans to build an advanced two-way system for educational delivery in a rural section of northern Michigan.

II. The Commission Should Adopt Rules for Two-Way Operation Which Recognize and Promote the Unique Educational Nature of ITFS.

We strongly agree with the Archdiocese of Los Angeles Education and Welfare Corporation ("Archdiocese"), which pointed out that ITFS is unlike the alphabet soup of other present and anticipated digital telecommunications services: WCS, LMDS, DBS, etc.[7] The Archdiocese's comments go on to say:

> ITFS cannot become just like these other services while still serving its academic mission. The Archdiocese welcomes changes to ITFS that enhance the ability to compete with... other services, *as long as* such changes also enhance the ability of educational institutions to provide instructional and educational programming.[8] [Original emphasis.]

As the Archdiocese and other commenters have pointed out, the essential value of ITFS lies not in the fact that it occupies spectrum which is similar to that used for other

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[7] Comments of Archdiocese, p. 3.

[8] Id.

telecommunications purposes, but rather in its uniqueness as a service dedicated to, and controlled by, educational organizations.[9]

The Present as Prologue

ITF's views on the strengths and infirmities of the Two-Way Petition flow from our analysis of the current trends in both the instructional and commercial uses of ITFS. While the past and present are not at issue in this proceeding, ITF feels a need to critique them frankly as a means of assessing appropriate regulations for ushering in two-way digital services.

We believe that, somewhat ironically, the largest single influence on ITFS in the past two decades has been the Commission's 1983 decision to permit the commercial use of excess ITFS capacity.[10] We believe that on balance this influence has

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[9] We note in this connection the comments of WebCel Communications, Inc. ("WebCel") and the Interactive Data Trade Association ("ISTA"), which oppose the two-way use of ITFS and MMDS channels on competitive grounds. While we leave it primarily to MMDS interests to rebut these parties' assertions concerning flexible use of MMDS spectrum, we were intrigued that WebCel chose to characterize the Two-Way Petition as an effort to raise the value of MMDS/ITFS spectrum, alluding to the high prices paid in PCS auction (WebCel Comments, p. 13), while ignoring that MMDS auction winners paid much more for their spectrum than successful bidders for two-way WCS spectrum. With respect to ITFS channels, ITF rejects the implication that ITFS spectrum is fundamentally comparable to PCS, IVDS, or LMDS. ITFS spectrum is licensed only to non-profit entities and cannot be sold in the manner of commercial spectrum. While many ITFS licensees make commercial use of ITFS spectrum, they do so as a means of furthering non-profit purposes. The Commission has repeatedly recognized and emphasized the primarily educational nature of ITFS. (See *Instructional Television Fixed Service*, 101 FCC 2d 49, 78, 81 (1985) "The ITFS spectrum is primarily intended for the transmission of formal education for schools;" *Instructional Television Fixed Service*, 75 RR 2d 755, 757 (1994) "The policy debate at issue is not the mechanism by which ITFS channel time is made available to wireless cable operators... but how we preserve the primary purpose of ITFS...")

[10] *Amendment of Parts 2, 21, 74, and 94 of the Commission's Rules and Regulations in Regard to Frequency Allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service, and the Private Operational Fixed Service, Report and Order*, 94 FCC 2d 1203 (1983) ("1983 Order").

been more positive than negative---and that both the positive and negative aspects are instructive as one contemplates two-way ITFS spectrum use.

On the positive side of the ledger, ITFS usage skyrocketed in the years following the 1983 Order. Whereas previously the FCC found that ITFS spectrum was so underutilized as to justify reallocation of the E and F channel groups to MMDS, today ITFS spectrum is fully occupied even in many rural areas. Further, revenues from the leasing of excess capacity have assisted ITF and many other licensees in providing instructional television service without charge or below cost. Wireless cable operators commonly have provided free facilities and maintenance support for ITFS systems. Finally, wireless cable transformed ITFS receiving equipment into inexpensive mass-produced hardware, and also greatly reduced the price of transmitters.

As wireless cable subscribership grew, ITFS licensees acquired an audience of home viewers for their programming to complement their traditional base of institutional receive sites. There have been some instances in which wireless cable operators developed their commercial systems in a manner which gave ITFS programming a rather prominent place. For example, People's Choice TV's Tucson system has included the University of Arizona's curricular offerings in its subscriber program guide.

However, in ITF's experience it has been more common for wireless cable operators to regard instructional programming as inimical to their goal of offering as many commercial channels as

possible.[11] In lease negotiations, operators have negotiated aggressively to restrict instructional program schedules to the minimum permitted by regulation. And, over the years, wireless cable interests have persuaded the Commission gradually to loosen instructional program requirements contained in its Rules.

The explosion in ITFS systems has brought many new licensees to ITFS. These licensees generally applied for ITFS authorizations because a wireless cable operator invited them to do so, and, unsurprisingly, the lease agreements which wireless operators brought along favor the lessee. Generally, licensees are educational institutions, such as school districts, which have broad educational missions, and, of necessity, must focus most of their attention on the day-to-day business of running schools. While most of these entities have an unquestionable devotion to education, they are all, initially, inexperienced in running ITFS systems. Generally, they possess little or no in-house engineering or communications law expertise.

As a consequence, ITFS entities tend to rely on wireless cable lessees, especially with regard to technical and legal matters. It is common for licensees to utilize their lessees' consulting engineers and attorneys, despite the fact that such arrangements leave them without independent advice.

The lack of independent legal and engineering counsel can be disastrous. On more than one occasion, our wireless cable

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[11] Because there are only 33 ITFS/MMDS channels, wireless cable systems generally offer fewer channels than their wired cable competitors.

lessees have asked us to sign "no objection" letters to technical proposals from adjacent markets---which, not coincidentally, the same operator was developing. Upon investigation, we discovered that these proposals produced serious levels of predicted interference. Because of our long experience as ITFS licensees, we have avoided most of the worst technical pitfalls. However, many licensees have not (and, truthfully, ITF too has granted consents which in retrospect we wish we had withheld).

Even when an ITFS licensee exercises care, serious problems with lessees can develop. The fact is that at times operators simply do not fulfill their lease commitments. While such abuses were more common in the 1980's when unscrupulous wireless cable "boiler room" scams abounded, ITF can attest from direct experience that more than one of today's prominent, publicly-held wireless cable companies has nakedly ignored contractual commitments.[12]

In our review of comments in the above-captioned proceeding, we have found no reference to the potentially deleterious effects of Section 74.986 of the Commission's Rules, which deals with involuntary modification applications. Such an omission is significant, given that the Two-Way Petition proposes a thorough-going revision of the architecture of contemporary wireless cable systems. In the vein of present-as-prologue, ITF wishes to refer the Commission to the record developed as a result of the 1994

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[12] In fairness, we must also say that in certain cases wireless cable operators have accused ITFS licensees of failing to uphold their obligations under airtime leases.

involuntary modification application filed by MMDS licensee Theodore D. Little against Denver Area Educational Telecommunications Consortium ("DAETC").[13] In this instance, DAETC contended that Little---whom it alleged had been represented by employees of the Denver wireless cable operator---wielded the involuntary modification rules in an effort to impose changes which would have ruined DAETC's ability to operate and expand its ITFS system.[14]

One might expect that with the advent of digital compression, and a concomitant increase in channel capacity, the tensions between ITFS licensees and channel-starved wireless cable operators would diminish. In fact, frictions appear to be growing. According to a recent petition submitted by the National ITFS Association ("NIA"),[15] excess capacity contracts have been filed with the Commission that reduce "the 'primary' [instructional] use of the spectrum down to as little as 2 and one-half percent, and the 'excess capacity' at 97 1/2%, with ALL of the benefit of the compression accruing to the commercial interests and 0%, as in NONE, accruing to educators."[16]

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[13] This application was assigned file number BMPLIF-940819EM. ITF inherits no small bias in this case, as its president, John Schwartz, also serves as president of DAETC.

[14] See DAETC's Opposition to Involuntary Modification Application, pp. 6-9.

[15] Second Petition for Clarification of the National ITFS Association, dated April 25, 1997.

[16] Id. at p. 3. The NIA filing evidently refers to excess capacity leases entered into between BellSouth and the licensees of three ITFS systems serving New Orleans: Focus on Education, New Orleans Educational Telecommunications Consortium, and Network for Instructional TV. ITF of course has no direct knowledge of the circumstances surrounding the

[Original emphasis.]

In light of more than 10 years of periodic, and at times utterly frustrating conflict between ITFS licensees and wireless cable operators, it perhaps understandable that NIA's Comments would characterize the Two-Way Petition as "a hostile takeover by an industry that wants to use [ITFS spectrum] for entirely new and inconsistent uses."[17] While ITF supports the NIA and its efforts to preserve the integrity of ITFS, we cannot accept this harsh assessment the two-way proposal. As we already have set forth, we feel that education has an immense amount to gain from the two-way use of ITFS frequencies. However, NIA raises a number of important issues which ITF believes the Commission needs to address, and which we discuss below.

To summarize, ITF's experience is that commercial firms, unsurprisingly, will act in what they perceive to be in their own best interests; such interests sometimes, but by no means inevitably, coincide with the interests of education. Given this background, ITF believes that it is important for the Commission to adopt two-way technical and procedural rules in a manner that allows educators to continue to operate ITFS systems for their primary purpose---instruction.

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negotiation of these contracts. However, we are troubled by accounts---widely circulated in ITFS circles---that BellSouth used intimidating tactics as a means of bargaining for the least possible amount of instructional program time.

[17] NIA Comments, p. 2.

Specific Recommendations

ITF presumes that the next step in the consideration of the Two-Way Petition is for the Commission to issue a Notice of Proposed Rulemaking ("NPRM"), and we ask that such be issued expeditiously.[18] We offer the following specific recommendations for the Commission to consider as it develops proposed rules. The items that ITF recommends are discussed below in somewhat abbreviated form, as we assume that there will be an occasion for fuller comment in the post-NPRM stage.

o ITF strongly supports the Two-Way Petition's proposal to accord protected service areas to all ITFS systems with respect to upstream transmissions, regardless of whether or not they lease excess capacity.[19] However, we feel that in light of the comprehensive changes being proposed with respect to cellularization, sectorization, etc., it is essential also to amend Section 74.903 of the rules to grant protected service areas against downstream interference to all ITFS systems, even if they are operated purely for instructional purposes. To do otherwise is to subject instructional-only systems to widespread interference which will make it impossible for them to add new receiving locations.

o ITF opposes the Two-Way Petition's proposal that the

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[18] Catholic Television Network suggests that these issues be resolved through a negotiated rulemaking pursuant to the Federal Advisory Committee Act (p. 4). ITF feels that there is merit to this suggestion in light of the need to balance competing interests quickly.

[19] See the proposed new Rule section 74.939(c)(3)(A) set forth in Exhibit B to the Two-Way Petition, p. 47.

Commission allow an ITFS system to "provide its entire channel capacity for two-way services and satisfy its minimum ITFS programming obligations utilizing channels other than those for which it is licensed."[20] It is precisely the ITFS licensee's control over its system which allows the educator to insure that instruction remains its principal purpose. Axiomatically, that control is attenuated when all instruction takes place over facilities which are licensed to others and remain, by longstanding policy, under the control of others. If the wireless cable industry wishes to operate contiguous blocks of upstream frequencies using ITFS channels, this goal can be accomplished by allowing ITFS licensees to exchange channels among the current groups so that each licensee always retains downstream capacity.[21] ITF believes that while the Commission should liberally allow such exchanges of channels in a given metropolitan area, it should not permit any ITFS system to devote more than half its capacity to upstream use, so that the licensee can continue to deliver programming once its relationship with the wireless cable operator ends.[22]

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[20] Two-Way Petition, p. 40.

[21] This idea is set forth in the Comments of the University of Arizona, *et al*, pp. 7-8. An existing B group licensee might, for instance, trade two channels with a G group licensee, such that both have two B-group upstream channels and two G-group downstream channels.

[22] ITF notes the comments of ComSpec Corporation, a consulting engineering firm. According to ComSpec, the high degree of interference protection accorded to response hubs will affect other users over radii of 100 miles or more (p. 2). It is thus likely that given frequencies will be permanently assigned to upstream use on a region-wide basis. Thus, one cannot assume that a channel, once devoted to upstream purposes, will be available for downstream use in the future.

o ITF shares the concerns expressed by Arizona State University, *et al*, and the NIA concerning the "reversibility" of two-way architectures, such that instructional service can be maintained even if the licensee withdraws from a relationship with a wireless cable lease.[23] As mentioned above, in our view certain aspects of two-way architecture will be irreversible, such as the assignment of upstream channels. In such cases, the Commission's Rules must bar those changes which could result in the loss of ITFS service. We agree with NIA that no schemes for superchannels or subchannels involving ITFS frequencies should be permitted unless it is also arranged by all affected parties in the region that the prior channelization will be restored at the expiration of a given agreement.[24]

o ITF vigorously opposes that portion of the Comments submitted by the parties which filed the Two-Way Petition (hereinafter "Two-Way Comments"); the Two-Way Comments call for the Commission to "remove the provisions... that limit any given 125 kHz [response] channel to use in conjunction with the use of the 6 MHz channel with which that 125 kHz channel is associated under the table in current Section 74.939(d)."[25] Because Section 74.939(d) assigns one 125 kHz response channel to each downstream ITFS channel, this proposal has the effect of reallocating 500

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[23] See Comments of Arizona Board of Regents, *et al*, at p. 7; NIA Comments, p.4. Similar issues are raised by the possibility that a wireless cable operator might fail financially. See Comments of Northeastern University at p. 7, Catholic Television Network at pp. 15-16.

[24] See NIA Comments, p. 4.

[25] Two-Way Comments, p. 10, footnote 17.

kHz of ITFS spectrum for possible commercial licensure per four-channel ITFS system. The Two-Way Comments aver that such a reallocation is needed to provide the flexibility needed in order to create upstream channels with bandwidths wider than 125 kHz.[26] That is incorrect. Such a goal can be accomplished simply by allowing ITFS licensees to trade response channels on a routine basis, such that they are no longer interleaved. Once a licensee possesses non-interleaved response channels, it can devote them to wideband upstream use if it chooses to do so.

o ITF believes that the Commission should require that substantial amounts of digital two-way channel capacity be reserved for educational purposes. We find the model apparently established by BellSouth in New Orleans to be completely unacceptable; the additional capacity created by digital operation must be shared equitably between commercial and educational uses. This matter is currently in negotiation between representatives of the National ITFS Association and the Wireless Cable Association International. We hope that a consensus position can be reached and presented for the Commission's consideration. If such is not achieved, ITF will consult with other ITFS licensees submit recommendations to the Commission.

o ITF requests that the Commission solicit comment on the issue of involuntary modifications in the two-way digital environment, with a view to preventing the filing of involuntary

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[26] Id.

modification applications that threaten existing and future instructional service.

o ITF believes that the Commission should require that two-way digital applications and interference consents be reviewed by legal and engineering counsel which are responsible only to the affected ITFS entity and do not represent commercial interests. We believe that such filings should be signed these independent advisors to certify that in their professional opinion the submission will not be harmful to future instructional service.

o We agree with the University of Arizona, *et al*, that the Commission should clarify that boosters operated on ITFS frequencies by wireless cable operators can remain on the air only so long as the applicable ITFS licensee(s) allow.[27]

o While we believe that the Commission should adopt procedures to expedite the processing of two-way applications, and agree that voluntary accords reached among licensees are desirable, we are concerned that highly abbreviated processing may overwhelm the ability of ITFS licensees to analyze complex engineering proposals.[28] We feel that ITFS entities are entitled to petition to deny or otherwise delay the processing of fast-track applications for a reasonable period of study.[29] We agree

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[27] See the Comments of the University of Arizona, *et al*, p. 4.

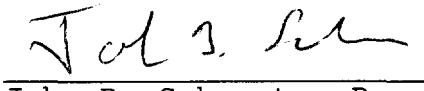
[28] The Comments of Dallas County Community College District, *et al*, express similar concerns (pp. 6-7). See the Two-Way Petition, pp. 34-38, for a description of the industry proposal.

[29] We are concerned that the Two-Way Petition's position on "frivolous" petitions to deny against complex engineering changes (p. 36), if adopted by the Commission, would have the effect of deterring careful examination of complex proposals.

with the University of Arizona, *et al*, that grant of fast-track digital proposals should not free the proponents of the obligation to cure actual interference which the new facilities cause.[30]

Respectfully submitted,

INSTRUCTIONAL TELECOMMUNICATIONS FOUNDATION, INC.

By: 

John B. Schwartz, President
P.O. Box 6060
Boulder, CO 80306

Dated: May 23, 1997

[30] Comments of the University of Arizona, *et al*, pp. 5-6.